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STRUCTURAL CHANGE IN THE CANADIAN ECONOMY

1961-1971

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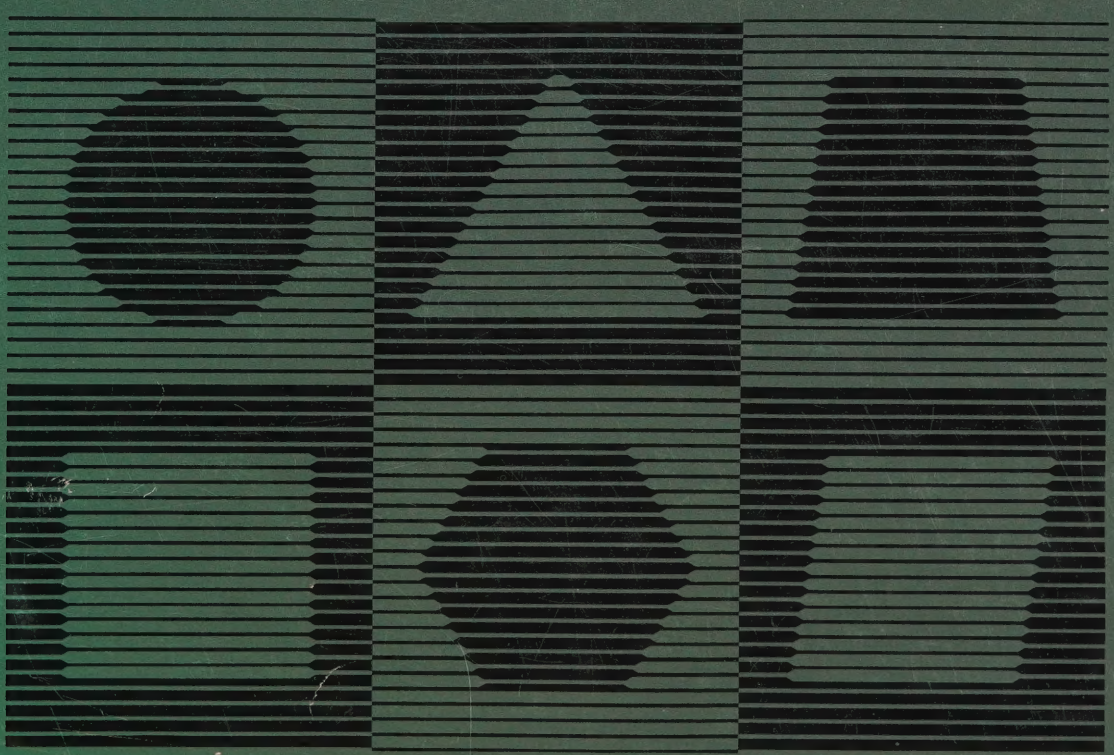

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STRUCTURAL CHANGE IN THE CANADIAN ECONOMY

1961-1971

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This paper presents some results of a study being undertaken in the Structural Analysis Division of Statistics Canada, Ottawa. It draws upon work done by Stephen Gribble, Kirk Hamilton and Aftab Syed, and the computational assistance of Bob Algie and Molle Wait. The study has been made possible by the availability of Input-Output Tables for Canada for 1961 to 1971, in 1961 prices, compiled by the staff of the Input-Output Division of Statistics Canada.

CONTENTS

INTRODUCTION

The purpose of this paper is to describe the methodology and to present some of the results of a descriptive analytical study of structural change in the Canadian economy, being undertaken at Statistics Canada.

The study examines the growth in the real output of goods and services, domestically produced and imported and the changes in the structures of demand, supply and production between the years 1961 and 1971 as reflected in the constant dollar Input-Output tables for Canada for those years. For analytical purposes a distinction is made between the demand for goods and services by final purchasers and the demand for goods and services by industries for intermediate use as inputs in the process of production.

The sectors which are the final purchasers, namely Consumers and the personal sector, Government Current Expenditure, Business and Government Investment and Exports, are examined in detail to identify their contribution to change due to changes in the level of their aggregate expenditure and in the composition of goods and services demanded.

Changes in the structure of industrial interdependence, and in the pattern of inputs used in production, are assessed using a number of different techniques and measures.

The study is descriptive in that it indicates the areas, magnitude and direction of change. However, the changes observed are the combined result of changes in classification and statistical definition, in the representation of the structure of the economy in the input-output framework, as well as real changes in the composition and pattern of final demand and in the product mix and input patterns of industries. These latter are, in turn, due to changes in the structure of industry, the availability of resources, relative prices and the technology of production.

The study does not attempt to identify the particular underlying causes of the changes which are observed.

METHODOLOGY

The data which have been used to analyse the changes in the Canadian economy that occurred between 1961 and 1971 are those of the Statistics Canada Input-Output tables. This structural representation of the supply and disposition of the goods and services produced in the Canadian economy and imported, forms the basis of the study. The tables which have been used are those for 1961 to 1971 in constant 1961 prices. These data also form the structural parameters of the Input-Output models which are used in the analysis.

The Input-Output Tables [1]

The Accounting Framework of the Canadian Input-Output tables consists primarily of three matrices; MAKE (V), USE (U) and Final Demand (FD), of rectangular format, with a larger number of commodities (595) than industries (191) and final demand sectors (136). Each industry produces one or more commodities and each commodity is produced by one or more industries. The Use and Final Demand matrices each contain an associated primary input matrix.

The method of construction of the tables is that the Make matrix, which shows the value of domestic output of commodities by industries is compiled in producer's prices. The Use and Final Demand matrices which show the disposition of supply among industries and final demand sectors, domestic and foreign, are first constructed in purchaser's prices. Total imports are shown as a sector of Final Demand, as negative entries against each commodity. At the second stage, the margins that make up the difference between producer's and purchaser's prices are deducted. These margins which relate to the cost of transportation, retailing and wholesaling and indirect commodity taxes, are reassigned to service or dummy commodities and to taxes. Finally, these revalued tables and the Make matrix are deflated to constant 1961 prices by the method of double deflation, each row of the tables being deflated by one price index for each commodity group, taxes being reestimated and value added being derived by difference.

The Input-Output Model

The underlying assumptions of the input-output model used for this study are fixed market shares and industry technology. The latter assumption is expressed in the matrix B, whose (i,j)-th element represents the value of intermediate commodity i used per dollar of output of the j-th industry (B is calculated from the USE matrix for a given year); the former assumption is represented by the matrix D, whose (j,i)-th element is the proportion of the domestic output of commodity i produced by the j-th industry (D is calculated from the MAKE matrix). The market share matrix D serves to allocate commodity demands among producing industries. Multiplying these matrices gives DB, an industry-by-industry matrix which is the analogue of the traditional Leontief technology matrix A.

In this study two variants of the Input-Output Model are used, their difference lying in the treatment of imports.

1. In the first variant total imports are deducted from final demand. Thus for a final expenditure Y and vectors of industry and commodity outputs X_g and X_q respectively, the model is as described below.

$$X_g = (I-DB)^{-1}DY \qquad (1)$$

where $Y = F + E - M$

(i.e. total imports M are deducted from the sum of domestic final demand F and foreign demand for exports E, to give final expenditure on goods and services Y).

$$X_g = DX_q \qquad (2)$$

and

$$X_q = BX_q + F + E - M \qquad (3)$$

Substituting (3) into (2) and solving

$$X_g = (I-DB)^{-1}D(F + E - M) \qquad (4)$$

or $(I-DB)^{-1}DY$

2. In the second variant, imports are endogenized using the import share assumption. If a fixed share μ_i of the domestic disappearance of each commodity i is assumed to be imported

$$M = \hat{\mu} (BX_g + F) \qquad (5)$$

Substituting (5) into (3)

$$X_g = [(I-D (I-\hat{\mu})B]^{-1}D[(I-\hat{\mu})F + E] \qquad (6)$$

The relationship between the two variants is given by (4) and (6)

$$X_g = (I-DB)^{-1}D(F + E-M) = [I-D(I-\hat{\mu})B]^{-1}D[(I-\hat{\mu})F + E].$$

The calculations of the model are all performed at the large aggregation of 191 industries and 595 commodities and the results are aggregated for presentation to categories shown in Appendix II which correspond to the medium aggregation (except for the final demand sectors) of the published version of the tables [1]. For reasons of confidentiality the Input-Output tables are not published at the large aggregation.

The Analysis of Changes In Output And Demand

Overview

The study begins with an overview of aggregate supply, output and demand in the Canadian economy for domestically produced and imported goods and services (valued in 1961 constant dollars) as well as of real GDP at factor cost and employment, between the years 1961 and 1971.

Relative Effect of Changes in Final Demand and Intermediate Demand

The variation in domestic output between two years can be attributed to growth, changes in the composition of final demand and changes in the structure of intermediate demand. The analysis which follows uses the input-output model (variant 1) to examine the extent to which the variation in aggregate domestic output between two years is attributable to changes in the level and composition of final expenditure and to changes in intermediate demand as a consequence of changes in the input structures of industry.

The Final Demand Effect is estimated as the difference in direct and indirect output required to produce the actual final expenditure of two different years, with constant "structure and technology" or the input coefficients of one year.

The Intermediate Demand Effect is estimated as the difference in direct and indirect output required to produce one year's final expenditure with changing "structure and technology" or the input coefficients of the two different years.

The actual methodology used is:

$$\text{Total Change} = X_t - X_{t-1} = [(I-DB)^{-1}D]_t \, Y_t - [(I-DB)^{-1}D]_{t-1} \, Y_{t-1}$$

$$\text{Final Demand Effect} = [(I-DB)^{-1}D]_{t-1} Y_t - [(I-DB)^{-1}D]_{t-1} \, Y_{t-1}$$

$$\text{Intermediate Demand Effect} = [(I-DB)^{-1}D]_t \, Y_t - [(I-DB)^{-1}D]_{t-1} \, Y_t$$

where Y = final expenditure and excludes total imports.

and t-1 refers to a previous time period.

Growth by Industrial Sector

A more detailed analysis by industrial sector, of the growth in output between 1961 and 1971 is undertaken next, in which the Final Demand Effect is sub-divided between the extent to which, growth in the level of final expenditure (scale effect) and change in the commodity composition of final expenditure (pattern effect) may be regarded as having contributed to the estimated change.

The actual methodology used is:

$$\text{Final Demand Effect} = [(I-DB)^{-1}D]_{t-1} \, Y_t - [(I-DB)^{-1}D]_{t-1} \, Y_{t-1}$$

$$\text{Scale Effect} = [(I-DB)^{-1}D]_{t-1} \, (Y_{t-1}\lambda) - [(I-DB)^{-1}D]_{t-1} \, Y_{t-1}$$

$$\text{Pattern Effect} = [(I-DB)^{-1}D]_{t-1} \, Y_t - [(I-DB)^{-1}D]_{t-1} \, (Y_{t-1}\lambda)$$

$$\text{for a scalar } \lambda = \left(\sum_i (Y_i)_t \left[\sum_i (Y_i)_{t-1}\right]^{-1}\right)$$

Analysis of Final Demand

The methodology described above can be extended to isolate the contribution

to change, of as many factors or components, as one may wish to distinguish, by changing each factor in turn in combination with all the others, in as many permutations and combinations as there are factors. In view of the fact that the choice of order biases the results, ideally each factor's contribution should be estimated as an average of the results of all the possible combinations.

This approach could therefore have been extended, to estimate the contribution of the major components of final demand, viz. consumers expenditure, government current expenditure, fixed capital formation, exports and imports and the change in the commodity composition of each to the change in commodity or industrial output. However, for this study, the analysis has been confined to an examination of the contribution of the various categories of final purchasers or sectors of final demand, to changes in the level and composition of final expenditure. The approach adopted is that of direct comparison of the final demand matrices for 1961 and 1971.

The Structure of Production

The analysis in this section of the paper concentrates on an examination of "interdependence" between industries and of industrial input structures, as represented in the matrix of technological coefficients.

Forward Linkages in Intermediate Production

The right dominant eigenvector of the technology matrix DB can serve as a key structural indicator. Its derivation and interpretation is given in the Appendix where it is shown that the ranking of industries in the dominant eigenvector is an intrinsic (i.e. demand-independent) measure of the relative importance of industries as producers of intermediate goods, and therefore serves to measure forward linkage. This indicator should be interpreted with care, however, since it is sensitive both to relative price changes and to the level of industry aggregation.

The dominant industries in terms of forward linkage possess an inherent

importance to the economy. Their dominance as intermediate producers in response to any stochastic increase in final demand means that capacity bottlenecks in these industries are in general detrimental to smooth short-term performance; conversely, the short-term resilience of the system in terms of its ability to meet stochastic increases in final demand would vary directly with the spare capacity in industries with dominant forward linkages.

As the linkage patterns between domestic industries have been modified both by technological change and by varying trade patterns, the analysis separates these effects using variant 2 of the model which endogenizes imports (see equation (6)). First the changes over time in the actual systems are compared and then the changes which are purely attributable to changing trade patterns are measured, by comparing the forward linkage eigenvectors of the following matrices:

(i) $D_{71}\ (I-\hat{\mu})_{71}\ B_{71}$ is compared to $D_{61}\ (I-\hat{\mu})_{61}\ B_{61}$, and
(ii) $D_{71}\ (I-\hat{\mu})_{71}\ B_{71}$ is compared to $D_{71}\ (I-\hat{\mu})_{61}\ B_{71}$.

The eigenvectors are normalized to one million constant 1961 dollars (with "dummy" sectors eliminated), and changes in forward linkage are measured simply as differences between the eigenvectors corresponding to (i) and (ii). The vectors were calculated at the large industry aggregation (191 sectors, corresponding roughly to the 3-digit SIC) and aggregated to the medium (43 sector) level to mask some of the "noise" in the system.

Industrial Input Structures

The input structures of industries are examined from various points of view.

Direct Demand for Commodity Inputs

To begin with, the extent to which each industry changed its direct commodity input structure, whether as a consequence of a change in its output mix or as a consequence of changes in the technology of production,

is examined by analysing the input coefficient matrix (B).

The summary measure used is:

$$C_j = K(1/2 \sum_i \left| B_{ij(1971)} - B_{ij(1961)} \right|)$$

where

i = commodities

j = industries

K = a scaling factor which produces indices of a convenient magnitude.

C is thus an index of the amount of share exchanged among commodities in the input structure of industry j between 1961 and 1971. It measures the extent to which commodity shares of industry input structures (of domestically produced and imported commodities taken together) changed.

Direct and Indirect Demand for Inputs

Industries draw upon domestic production and imports for both their direct and their indirect input requirements. Therefore their demand is now analysed by making the import share assumption, and estimating the direct and indirect requirement from each source needed to produce a thousand dollars of industry output. Changes in the direct and indirect requirements for man years of labour per thousand dollars of industry output are also examined.

Using variant 2 of the model, the direct and indirect requirements are calculated as shown below.

domestically produced goods and services = $i_r' (I-\hat{\mu})B[I-D(I-\hat{\mu})B]^{-1}$

imports = $\mu' B[I-D(I-\hat{\mu})B]^{-1}$

man years of employment = $\ell' [I-D(I-\hat{\mu})B]^{-1}$

where i_r' = inputs of goods and services

μ' = the proportion of demand met from imports

and

ℓ' = $L_g' \hat{X}_g^{-1}$

where L'_g = man years of labour by industry

X'_g = output by industry

The calculations are performed at the large aggregation and the results are weighted by industry outputs for aggregation to the industry groups shown in the tables. The change in direct and indirect requirements is derived by subtracting the results for 1961 from those for 1971.

Input Substitution

Finally, the change in the input requirements of industries is examined by comparing the pattern of goods and services that would have been required by industry to produce the final expenditure (i.e. final demand net of total imports) of 1971, with the changing structures and technologies of production reflected in the coefficient matrices of different years.

$$X_{q(INT)_t} = [(I-DB)_t^{-1} \quad Y_{1971}] \quad - Y_{1971}$$

where $X_{q(INT)}$ is the demand for goods and services by intermediate industry and t = 1961, 1966 or 1971.

RESULTS

Overview

The period 1961 to 1971 was a period of relatively steady annual growth in real terms for the Canadian economy as compared to the more erratic growth of the nineteen fifties.

The total supply of goods and services, whether domestically produced or imported, valued in 1961 prices, grew from $75.0 billion in 1961 to $131.9 billion in 1971, at an average growth rate of 5.8% per annum.

The final demand which this total of goods and services met either directly or by being embodied in production, grew from $40.7 billion to $71.8 billion, also at an average rate of 5.8% per annum.

The proportion of aggregate goods and services which were directly purchased by final demand remained an almost constant proportion of total supply, between 53.4% and 54.7%.

The income generated by domestic output (GDP at factor cost) was $35.5 billion in 1961 and $60.1 billion in 1971. Employment grew at 3.3% per annum from 4.999 million man-years in 1961 to 6.924 million man-years in 1971.

The economy became more open to trade (particularly after the signing of the automotive agreement with the United States in 1966). The share of imports as a proportion of total supply which had been 10.6% in 1961 was 12.7% in 1971, the average growth of domestic output being 5.6% per annum and of imports, 7.7% per annum. Exports grew at 9.1% per annum. Their share of domestic output grew from 10.6% in 1961 to 14.8% in 1971. Data for the years 1961 through 1971 are presented in Table I.

Table I

SUPPLY, OUTPUT, AND DEMAND, 1961 - 1971

	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	61-71
TOTAL SUPPLY - (X+M) ($)*	75.0	79.9	84.4	91.8	99.3	106.9	109.9	116.3	123.4	124.6	131.9	
- GROWTH RATES P.A.		(6.6)	(5.6)	(8.7)	(8.2)	(7.7)	(2.8)	(5.9)	(6.1)	(1.0)	(5.9)	(5.8)
DOMESTIC OUTPUT - (X) ($)	67.0	71.4	75.9	82.1	88.5	94.6	97.0	102.1	107.3	109.0	115.1	
- GROWTH RATES P.A.		(6.6)	(6.2)	(8.3)	(7.7)	(6.9)	(2.5)	(5.3)	(5.1)	(1.5)	(5.6)	(5.6)
IMPORTS - (M) ($)	8.0	8.5	8.6	9.6	10.8	12.3	12.9	14.2	16.0	15.6	16.8	
- GROWTH RATES P.A.		(6.4)	(.9)	(12.6)	(12.1)	(13.9)	(4.9)	(9.7)	(13.2)	(-2.6)	(7.5)	(7.7)
DOMESTIC OUTPUT	89.4	89.4	89.9	89.5	89.1	88.5	88.3	87.8	87.0	87.5	87.3	
IMPORTS (SHARES)	10.6	10.6	10.1	10.5	10.9	11.5	11.7	12.2	13.0	12.5	12.7	
TOTAL SUPPLY	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	
FINAL DEMAND - ($)	40.7	43.5	45.4	49.1	53.3	57.5	59.1	62.8	67.5	67.8	71.8	
INTERMEDIATE DEMAND ($)	34.3	36.5	39.0	42.7	45.9	49.4	50.8	53.5	55.8	56.8	60.1	
TOTAL DEMAND (X+M) ($)	75.0	79.9	84.4	91.8	99.3	106.9	109.9	116.3	123.4	124.6	131.9	
FINAL DEMAND - GROWTH RATES P.A.		(6.8)	(4.5)	(8.0)	(8.7)	(7.8)	(2.8)	(6.3)	(7.5)	(.3)	(6.0)	(5.8)
INTERMEDIATE DEMAND - GROWTH RATES P.A.		(6.3)	(7.0)	(9.6)	(7.5)	(7.5)	(2.8)	(5.4)	(4.4)	(1.7)	(5.7)	(5.8)
TOTAL DEMAND - GROWTH RATES P.A.		(6.6)	(5.6)	(8.7)	(8.2)	(7.7)	(2.8)	(5.9)	(6.1)	(1.0)	(5.9)	(5.8)
FINAL DEMAND	54.3	54.4	53.8	53.4	53.7	53.8	53.8	54.0	54.7	54.4	54.5	
INTERMEDIATE DEMAND (SHARES)	45.7	45.6	46.2	46.6	46.3	46.2	46.2	46.0	45.3	45.6	45.5	
TOTAL DEMAND	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	
GDP AT FACTOR COST ($)	35.5	38.0	40.0	42.7	45.8	48.7	50.1	52.9	56.1	57.0	60.1	
- GROWTH RATES P.A.		(6.9)	(5.2)	(6.8)	(7.3)	(6.3)	(2.8)	(5.6)	(6.1)	(1.6)	(5.4)	(5.4)
** EMPLOYMENT - (000,000 MAN YEARS)	4.999	5.260	5.333	5.656	5.857	6.131	6.311	6.436	6.680	6.770	6.924	
- GROWTH RATES P.A.		(5.2)	(1.4)	(6.1)	(3.6)	(4.7)	(2.9)	(2.0)	(3.8)	(1.4)	(2.3)	(3.3)

* NOTE: ALL FLOWS ARE EXPRESSED IN THOUSANDS OF MILLIONS OF CONSTANT 1961 DOLLARS

** PROVISIONAL ESTIMATES

Relative Effect of Changes in Final Demand and Intermediate Demand

The year to year changes in total domestic output between 1961 and 1971 as well as the overall change between the two years is shown in Table II. These changes are attributed to, what can be described as the "final demand effect", or the change due to changes in the level and composition of final expenditure, and the "intermediate demand effect" or the change due to changes in industrial input structures. The contribution of each effect to the total change is also shown.

As a rule the contribution of the intermediate demand effect is much smaller than that of the final demand effect. However, in five of the ten years positive changes in the demand for goods and services on account of the two effects reinforced one another, but in the other five, a positive change in the final demand effect was offset by a negative change in the intermediate demand effect. In the two years of very low growth, 1967 and 1970, the contribution of the final demand effect to the total change fell considerably.

Growth by Industrial Sector

During the period 1961-1971 real gross domestic output grew by 5.6%. Detailed data of the growth in output by industrial sector is shown in Table III. The table shows that the fastest growing industries between 1961 and 1971 were transportation equipment, which became the largest manufacturing industry by 1971, rubber and plastics products, and mineral fuels, as well as the two service industries - services to business management and communication. Among the very slow growing industries were leather, forestry, fishing, hunting and trapping and other personal services, particularly during the second half of the period, i.e. between 1966 and 1971, when the first three industries experienced negative rates of growth of output.

RELATIVE EFFECT OF CHANGES IN FINAL DEMAND AND INTERMEDIATE DEMAND, 1961-1971

	TOTAL OUTPUT	TOTAL OUTPUT	PARTITION OF CHANGE			CONTRIBUTION TO CHANGE		PER ANNUM CHANGE		
	X_t *($KM)	X_{t-1} ($KM)	TOTAL CHANGE ($KM)	FD EFFECT ($KM)	INTD EFFECT ($KM)	FD EFFECT	INTD EFFECT	TC/X_{t-1} %	FDE/X_{t-1} %	$INTD/X_{t-1}$ %
61-71	115,107	67,003	48,104	46,346	1,758	96	4	5.6	5.4	.3
61-62	71,427	67,003	4,424	4,706	-282	95	5	6.6	7.0	-.4
62-63	75,863	71,427	4,436	3,965	471	89	11	6.2	5.6	.6
63-64	82,146	75,863	6,283	5.590	693	89	11	8.2	7.3	.9
64-65	88,458	82,146	6,312	6,860	-548	93	7	7.7	8.3	-.7
65-66	94,571	88,458	6,113	5,700	413	93	7	6.9	6.4	.5
66-67	96,966	94,571	2,395	1,790	605	75	25	2.5	1.9	.6
67-68	102,148	96,966	5,182	5,319	-137	98	2	5.3	5.4	-.1
68-69	107,333	102,148	5,185	5,626	-441	93	7	5.0	5.4	-.4
69-70	108,955	107,333	1,622	921	701	57	43	1.5	.9	.6
70-71	115,107	108,955	6,152	6,269	-117	99	1	5.6	5.7	-.1

*($KM) Millions of constant 1961 dollars

Table II

Many industries such as machinery, electrical products and metal fabricating experienced very high rates of growth in the first half of the period but grew very slowly during 1966-1971. Though not as extreme, the picture is similar for many other industries. For output as a whole the period 1961 to 1966 is one of relatively more rapid per annum growth, at 7%, than the period 1966 to 1971 at 4%.

Final Demand and Intermediate Demand Effect

The change in output by industrial sector between 1961 and 1971 is analysed further in terms of how much of the change in the output of industries can be attributed to the growth in the level of final demand (scale effect), how much to the change in the composition of final demand (pattern effect) and how much to the change in the pattern of industrial demand (intermediate demand effect).

In Table III the column entitled F.D. scale effect, shows the increase in output that would have been required from each industry if there had been a uniform increase (of 69%) in Final Expenditure, without any change in its composition or in the input per unit of output requirements of industry.

Of the industries whose output grew faster than the average increase (of 69%) in Final Expenditure between 1961 and 1971, there were some for whom the scale effect was enhanced either by a positive change in the composition of final expenditure, as for example for transportation equipment, mineral fuels etc. and/or by a positive change in the composition of intermediate demand, as for services to business management. For some, such as rubber and plastic products, the positive effect due to intermediate demand was slightly modified by an adverse effect due to the change in the pattern of final expenditure. For the industries which grew slower, the table shows whether and to what extent it was the change in the composition of final expenditure and/or of intermediate demand that offset the scale effect and reduced the growth of output of the industry.

Though in general, the intermediate demand effect contributes less to total change than the final demand effect, this analysis shows that for certain

OUTPUT BY INDUSTRY 1961-71

	INDUSTRIES	TOTAL OUTPUT($KM) 1961	1966	1971	AVERAGE PER ANNUM GROWTH RATES 61-66	66-71	61-71	PARTITION OF CHANGE ($KM) TOTAL CHANGE 61-71	F.D. SCALE EFFECT	F.D. PATTERN EFFECT	INTD. EFFECT
22	TRANSPORTATION EQUIPMENT IND.	1945	4207	6290	16.7	8.4	12.5	4345	1351	2535	459
10	RUBBER & PLASTICS PRODUCTS IND.	451	831	1170	13.0	7.1	10.0	719	313	-18	424
5	MINERAL FUELS	688	1066	1722	9.1	10.1	9.6	1034	478	556	0
38	SERVICES TO BUSINESS MANAGEMENT	992	1557	2363	9.4	8.7	9.1	1371	689	4	678
30	COMMUNICATION	1099	1619	2298	8.1	7.2	7.7	1198	763	329	106
21	MACHINERY INDUSTRIES	765	1573	1584	15.5	.1	7.5	819	532	244	43
12	TEXTILE INDUSTRIES	847	1297	1708	8.9	5.7	7.3	861	588	13	260
23	ELECTRICAL PRODUCTS INDUSTRIES	1290	2259	2597	11.9	2.8	7.2	1307	896	294	117
31	ELEC POWER,GAS,OTHER UTILITIES	1033	1508	2035	7.9	6.2	7.0	1002	717	148	137
13	KNITTING MILLS	221	316	430	7.4	6.4	6.9	209	154	-53	109
42	OPERATING,OFFICE,LAB & FOOD	2599	4142	5050	9.8	4.0	6.9	2451	1805	391	255
6	NON-METAL MINES & QUARRIES	273	440	530	10.0	3.8	6.9	257	190	-42	109
20	METAL FABRICATING INDUSTRIES	1554	2696	2999	11.6	2.2	6.8	1445	1079	260	105
32	WHOLESALE TRADE	2529	3872	4856	8.9	4.6	6.7	2327	1757	547	23
29	TRANSPORTATION & STORAGE	3507	5093	6623	7.7	5.4	6.6	3117	2435	357	325
41	TRANSPORTATION MARGINS	1688	2420	3145	7.5	5.4	6.4	1456	1173	239	44
36	EDUCATION & HEALTH SERVICES	699	935	1273	6.0	6.4	6.2	574	486	86	3
27	MISC MANUFACTURING INDUSTRIES	574	807	1037	7.0	5.1	6.1	462	399	4	59
26	CHEMICAL & CHEMICAL PROD. IND.	1498	2241	2699	8.4	3.8	6.1	1201	1040	-16	178
16	FURNITURE & FIXTURE INDUSTRIES	366	575	646	9.4	2.4	5.8	280	254	18	7
24	NON-METALLIC MINERAL PROD. IND.	697	1057	1193	8.7	2.5	5.5	496	484	66	-54
37	AMUSEMENT & RECREATION SERVICES	261	354	440	6.3	4.5	5.4	179	181	11	-13
35	OTHER FINANCE,INS. & REAL ESTATE	4313	5636	7260	5.5	5.2	5.3	2947	2996	-129	80
19	PRIMARY METAL INDUSTRIES	2462	3490	4086	7.2	3.2	5.2	1624	1710	-262	176
43	TRAVEL & ADVERTISING,PROMOTION	1409	1946	2315	6.7	3.5	5.1	906	979	113	-186
7	SERVICES INCIDENTAL TO MINING	184	263	295	7.4	2.3	4.8	111	128	-39	22
25	PETROLEUM & COAL PRODUCTS IND.	1242	1578	1935	4.9	4.2	4.5	693	863	-35	-135
17	PAPER & ALLIED INDUSTRIES	2229	3003	3441	6.1	2.8	4.4	1212	1548	-310	-25
33	RETAIL TRADE	4318	5610	6657	5.4	3.5	4.4	2339	2999	-460	-200
15	WOOD INDUSTRIES	1060	1383	1626	5.5	3.3	4.4	566	736	-39	-130
28	CONSTRUCTION INDUSTRY	7084	9429	10859	5.9	2.9	4.4	3775	4920	-777	-368
39	ACCOMMODATION & FOOD SERVICES	1652	1866	2422	2.5	5.3	3.9	770	1147	-306	-72
8	FOOD & BEVERAGE INDUSTRIES	5157	6439	7528	4.5	3.2	3.9	2371	3581	-1398	187
4	METAL MINES	1093	1381	1591	4.8	2.9	3.8	499	759	-197	-63
1	AGRICULTURE	2844	4099	4107	7.6	.0	3.7	1263	1975	-378	-334
14	CLOTHING INDUSTRIES	817	1038	1177	4.9	2.5	3.7	360	567	-231	23
18	PRINTING & PUBLISHING	875	1067	1212	4.1	2.6	3.3	337	608	12	-282
9	TOBACCO PRODUCTS INDUSTRIES	335	384	447	2.7	3.1	2.9	112	233	-123	2
34	OWNER OCCUPIED DWELLINGS	2472	2889	3263	3.2	2.5	2.8	791	1717	-925	0
40	OTHER PERSONAL & MISC SERVICES	651	797	804	4.1	.2	2.1	153	452	-270	-30
3	FISHING,HUNTING & TRAPPING	124	158	146	5.1	-1.6	1.7	23	86	-43	-21
2	FORESTRY	808	922	918	2.7	-.1	1.3	110	561	-176	-276
11	LEATHER INDUSTRIES	295	331	328	2.3	-.2	1.1	33	205	-187	15
	INDUSTRY TOTAL	67003	94571	115106	7.1	4.0	5.6	48105	46534	-187	1757

Table III

industries, changes in the pattern of industrial demand contributed substantially to their change in output. These industries were, in the order of their rates of growth of output, rubber and plastic products, services to business management, textiles and knitting mills, non-metal mines, printing and publishing and forestry.

The table also shows that the structure of production and input pattern of industries between 1961 and 1971 changed in the direction of reducing demand for the outputs of construction, agriculture, printing and publishing, forestry etc. (i.e. those industries for which the intermediate demand effect is negative), and of increasing demand for the output of rubber and plastics products, services to business management, non-metal mines etc. (i.e., those for which intermediate demand effect is positive).

Analysis of Final Demand

The period 1961 to 1971 was one of 'export led' growth. Table IV shows the relative rates of growth in the demand for goods and services, by the various categories of final purchasers.

Table IV FINAL DEMAND FOR GOODS AND SERVICES

	FINAL DEMAND ($KM)			AVERAGE PER ANNUM GROWTH RATES			SHARES	
	1961	1966	1971	61-66	66-71	61-71	1961	1971
CONSUMERS' EXPENDITURE	23311	29709	35950	5.0	3.9	4.4	56.6	49.4
FIXED CAPITAL FORMATION	8246	12861	14453	9.3	2.4	5.8	20.0	19.8
INVENTORIES	57	1039	362	79.0	-19.0	20.4	.1	.5
GOV'T CURRENT EXPENDITURE	2295	3064	4670	6.0	8.8	7.4	5.6	6.4
EXPORTS	7128	11253	17074	9.6	8.7	9.1	17.3	23.4
RE-EXPORTS	135	224	333	10.7	8.3	9.5	.3	.5
TOTAL FINAL DEMAND	41172	58151	72842	7.1	4.6	5.9	100.0	100.0
IMPORTS	-7964	-12300	-16778	9.1	6.4	7.7	-19.3	-23.0
GOV'T REVENUE (SALE OF GOODS&SERV.)	-481	-651	-1019	6.2	9.4	7.8	-1.2	-1.4
TOTAL FINAL EXPENDITURE	32726	45199	55046	6.7	4.0	5.3	79.5	75.6

Consumers Expenditure accounts for about half of final demand but at 4.4%, its per annum growth rate was the slowest of the various categories, resulting in a reduction in its share of final demand from 56% to 49% between 1961 and 1971. This decline in share was almost entirely taken up by Exports whose share increased from 17% to 23%.

Exports grew by 9.1%, followed by Government Current Expenditure at 7.4% and Fixed Capital Formation at 5.8%.

Fixed Capital Formation had grown almost as fast as Exports between 1961 and 1966 at 9.3% per annum but between 1966 and 1971 Investment growth fell back to 2.4% accounting for the slow growth in the output of capital goods manufacturing industries during this period, which has been observed earlier.

Impact of Final Expenditure

The level of final demand for the output of the various industries as well as total imports of the products of those industries in 1961 and 1971 is shown in Table V. The change between 1961 and 1971 is analysed in Table VI in which the relative contribution of the different categories of final demand and of imports to the total change in final expenditure for the output of industries, between those years, is also shown. Looking at the major industries in the order of their growth rates between 1961 and 1971, it is of some interest to note that Exports played the dominant role in the contribution of final demand to the growth in transportation equipment and the following major primary, extractive and resource based industries - mineral fuels, metal and non-metal mines and agriculture, primary metal and paper and wood industries. Consumers expenditure was dominant for communication, textiles and the utilities and in the cases of rubber and plastics products and transportation, both Consumers Expenditure and Exports made an almost equal contribution.

During this period Imports increased and moderated the growth in final demand. The increase in imports was important in the case of transportation equipment (vehicles and parts) and in the case of capital goods of all categories including machinery and electrical products. Imports of industrial inputs such as primary and fabricated metals, chemicals and mineral fuels also increased as well as those of manufactures such as plastic products, food and beverages, textiles and miscellaneous manufactures.

FINAL EXPENDITURE 1961, 1971

	INDUSTRIES	1961 ($KM)						1971 ($KM)					
		CE	FCF	INV	GOVT[1]	E[2]	M	CE	FCF	INV	GOVT[1]	E[2]	M
1	AGRICULTURE	528	0	-368	2	780	-246	623	0	-23	4	1107	-321
2	FORESTRY	35	1	2	1	39	-14	14	1	-21	0	30	-22
3	FISHING,HUNTING & TRAPPING	3	0	0	0	33	-18	8	0	0	0	36	-25
4	METAL MINES	4	11	39	0	434	-69	8	13	37	1	698	-86
5	MINERAL FUELS	58	9	10	12	196	-504	76	6	-8	5	879	-742
6	NON-METAL MINES & QUARRIES	5	3	7	12	149	-48	16	2	9	23	296	-100
7	SERVICES INCIDENTAL TO MINING	0	84	0	0	1	-6	0	91	-1	0	2	-5
8	FOOD & BEVERAGE INDUSTRIES	3419	11	101	2	417	-444	4855	21	36	3	718	-653
9	TOBACCO PRODUCTS INDUSTRIES	226	0	11	0	28	-9	308	0	-5	0	47	-13
10	RUBBER & PLASTICS PRODUCTS IND.	168	9	6	2	18	-121	284	20	17	1	128	-506
11	LEATHER INDUSTRIES	237	0	5	0	16	-46	300	1	11	0	16	-112
12	TEXTILE INDUSTRIES	216	9	2	8	46	-372	508	11	32	24	116	-727
13	KNITTING MILLS	203	0	3	1	2	-40	364	0	15	4	14	-154
14	CLOTHING INDUSTRIES	766	1	44	4	9	-67	1098	1	49	10	50	-139
15	WOOD INDUSTRIES	30	13	8	0	391	-77	37	21	-37	-3	665	-105
16	FURNITURE & FIXTURE INDUSTRIES	254	76	13	3	5	-41	406	145	21	5	40	-67
17	PAPER & ALLIED INDUSTRIES	118	9	4	-12	1132	-124	192	19	20	2	1633	-197
18	PRINTING & PUBLISHING	244	5	4	11	11	-137	308	3	3	55	31	-209
19	PRIMARY METAL INDUSTRIES	12	4	-1	10	1056	-355	18	13	43	0	1587	-796
20	METAL FABRICATING INDUSTRIES	120	135	9	13	67	-446	190	296	-48	12	295	-806
21	MACHINERY INDUSTRIES	49	681	10	20	158	-732	106	1471	-79	37	557	-1653
22	TRANSPORTATION EQUIPMENT IND.	897	489	36	291	210	-890	2036	1158	230	146	3762	-3686
23	ELECTRICAL PRODUCTS INDUSTRIES	445	339	28	43	87	-445	838	726	-6	46	397	-1010
24	NON-METALLIC MINERAL PROD. IND.	57	14	16	1	40	-154	63	19	9	1	96	-201
25	PETROLEUM & COAL PRODUCTS IND.	522	1	21	61	10	-140	781	3	44	96	67	-199
26	CHEMICAL & CHEMICAL PROD. IND.	374	8	20	60	211	-400	665	19	26	113	430	-863
27	MISC MANUFACTURING INDUSTRIES	313	94	16	41	54	-322	554	233	9	63	188	-773
28	CONSTRUCTION INDUSTRY	21	5463	0	475	0	0	40	8958	0	429	0	0
29	TRANSPORTATION & STORAGE	514	1	0	71	351	-81	834	5	0	152	694	-144
30	COMMUNICATION	350	33	1	57	25	-13	830	71	-4	166	41	-41
31	ELEC POWER,GAS,OTHER UTILITIES	534	0	1	-30	16	-7	990	1	0	49	34	-7
32	WHOLESALE TRADE	750	250	1	38	114	-20	1357	481	-9	67	509	-86
33	RETAIL TRADE	3483	78	3	17	9	-19	5236	157	1	22	12	-11
34	OWNER OCCUPIED DWELLINGS	2472	0	0	0	0	0	3263	0	0	0	0	0
35	OTHER FINANCE,INS. & REAL ESTATE	2165	331	0	36	35	-103	3825	338	0	48	51	-228
36	EDUCATION & HEALTH SERVICES	821	0	0	-122	0	0	679	0	0	590	0	0
37	AMUSEMENT & RECREATION SERVICES	206	0	0	-14	0	0	386	1	0	-41	0	0
38	SERVICES TO BUSINESS MANAGEMENT	151	1	0	121	36	-146	293	4	0	279	106	-309
39	ACCOMMODATION & FOOD SERVICES	1347	1	0	-2	0	0	1976	1	0	-12	0	-1
40	OTHER PERSONAL & MISC SERVICES	557	0	0	21	0	0	672	0	0	12	0	0
41	TRANSPORTATION MARGINS	335	80	0	19	329	0	494	141	0	31	846	0
42	OPERATING,OFFICE,LAB & FOOD	42	0	0	478	0	0	165	0	0	1078	0	0
43	TRAVEL & ADVERTISING,PROMOTION	15	0	0	132	0	0	57	0	0	258	0	0
	INDUSTRY TOTAL	23066	8246	54	1883	6514	-6659	35753	14453	371	3776	16178	-14997

1 Govt = Govt current expenditure minus Govt revenue

2 E = Exports plus re-exports

ANALYSIS OF FINAL EXPENDITURE CHANGE, 1961-71

	INDUSTRIES	RATE OF GROWTH OF INDUSTRY OUTPUT	CHANGE IN FINAL EXPENDITURE ($KM) 1971 - 1961						CONTRIBUTION TO CHANGE					
			CE	FCF	INV	GOVT[1]	E[2]	M[3]	CE	FCF	INV	GOVT[1]	E[2]	M
22	TRANSPORTATION EQUIPMENT IND.	12.5	114	67	19	-14	355	-280	13	8	2	2	42	33
10	RUBBER & PLASTICS PRODUCTS IND.	10.0	12	1	1	0	11	-39	18	2	2	0	17	61
5	MINERAL FUELS	9.6	2	0	-2	-1	68	-24	2	0	2	1	71	25
38	SERVICES TO BUSINESS MANAGEMENT	9.1	14	0	0	16	7	-16	27	1	0	29	13	30
30	COMMUNICATION	7.7	48	4	0	11	2	-3	71	6	1	16	2	4
21	MACHINERY INDUSTRIES	7.5	6	79	-9	2	40	-92	3	35	4	1	18	40
12	TEXTILE INDUSTRIES	7.3	29	0	3	2	7	-36	38	0	4	2	9	46
23	ELECTRICAL PRODUCTS INDUSTRIES	7.2	39	39	-3	0	31	-57	23	23	2	0	18	33
31	ELEC POWER,GAS,OTHER UTILITIES	7.0	46	0	0	8	2	0	82	0	0	14	3	0
13	KNITTING MILLS	6.9	16	0	1	0	1	-11	53	0	4	1	4	38
42	OPERATING,OFFICE,LAB & FOOD	6.9	12	0	0	60	0	0	17	0	0	83	0	0
6	NON-METAL MINES & QUARRIES	6.9	1	0	0	1	15	-5	5	1	1	5	65	23
20	METAL FABRICATING INDUSTRIES	6.8	7	16	-6	0	23	-36	8	18	7	0	26	41
32	WHOLESALE TRADE	6.7	61	23	-1	3	39	-7	45	17	1	2	29	5
29	TRANSPORTATION & STORAGE	6.6	32	0	0	8	34	-6	39	0	0	10	42	8
41	TRANSPORTATION MARGINS	6.4	16	6	0	1	52	0	21	8	0	2	69	0
36	EDUCATION & HEALTH SERVICES	6.2	-14	0	0	71	0	0	17	0	0	83	0	0
27	MISC MANUFACTURING INDUSTRIES	6.1	24	14	-1	2	13	-45	24	14	1	2	13	45
26	CHEMICAL & CHEMICAL PROD. IND.	6.1	29	1	1	5	22	-46	28	1	1	5	21	44
16	FURNITURE & FIXTURE INDUSTRIES	5.8	15	7	1	0	4	-3	52	24	3	1	12	9
24	NON-METALLIC MINERAL PROD. IND.	5.5	1	0	-1	0	6	-5	5	4	5	1	47	38
37	AMUSEMENT & RECREATION SERVICES	5.4	18	0	0	-3	0	0	87	0	0	13	0	0
35	OTHER FINANCE,INS. & REAL ESTATE	5.3	166	1	0	1	2	-13	91	0	0	1	1	7
19	PRIMARY METAL INDUSTRIES	5.2	1	1	4	-1	53	-44	0	1	4	1	51	42
43	TRAVEL & ADVERTISING,PROMOTION	5.1	4	0	0	13	0	0	25	0	0	75	0	0
7	SERVICES INCIDENTAL TO MINING	4.8	0	1	0	0	0	0	0	73	9	1	8	8
25	PETROLEUM & COAL PRODUCTS IND.	4.5	26	0	2	4	6	-6	59	0	5	8	13	14
17	PAPER & ALLIED INDUSTRIES	4.4	7	1	2	1	50	-7	11	1	2	2	73	11
33	RETAIL TRADE	4.4	175	8	0	1	0	1	95	4	0	0	0	0
15	WOOD INDUSTRIES	4.4	1	1	-5	0	27	-3	2	2	12	1	75	8
28	CONSTRUCTION INDUSTRY	4.4	2	350	0	-5	0	0	1	98	0	1	0	0
39	ACCOMMODATION & FOOD SERVICES	3.9	63	0	0	-1	0	0	98	0	0	2	0	0
8	FOOD & BEVERAGE INDUSTRIES	3.9	144	1	-7	0	30	-21	71	1	3	0	15	10
4	METAL MINES	3.8	0	0	0	0	26	-2	1	1	1	0	91	6
1	AGRICULTURE	3.7	9	0	35	0	33	-7	11	0	41	0	39	9
14	CLOTHING INDUSTRIES	3.7	33	0	0	1	4	-7	73	0	1	1	9	16
18	PRINTING & PUBLISHING	3.3	6	0	0	4	2	-7	32	1	1	21	10	36
9	TOBACCO PRODUCTS INDUSTRIES	2.9	8	0	-2	0	2	0	68	0	14	0	16	3
34	OWNER OCCUPIED DWELLINGS	2.8	79	0	0	0	0	0	100	0	0	0	0	0
40	OTHER PERSONAL & MISC SERVICES	2.1	12	0	0	-1	0	0	93	0	0	7	0	0
3	FISHING,HUNTING & TRAPPING	1.7	1	0	0	0	0	-1	35	0	0	1	19	44
2	FORESTRY	1.3	-2	0	-2	0	-1	-1	33	0	38	0	15	13
11	LEATHER INDUSTRIES	1.1	6	0	1	0	0	-7	46	0	5	0	0	49
	INDUSTRY TOTAL	5.6	1269	621	32	189	966	-834	32	16	1	5	25	21

1 Govt = Govt current expenditure minus Govt revenue

2 E = Exports plus re-exports

3 Negative entry denotes positive change in Imports

Table VI

The Structure of Production

Forward Linkage in Intermediate Production

Table VII shows the forward linkage vectors (with imports endogenized) for 1961 in column (1), for 1971 in column (3), as well as the hypothetical linkages corresponding to a Canadian economy with 1971 technology and 1961 propensities to import (as embodied in the 1961 import share coefficients) in column (2). In 1961 the most strongly forward-linked sectors were transport, finance and real estate, and wholesale trade, followed by primary metals, and pulp and paper products. This reflects the dependence of the economy on "infrastructure" in the case of the first three, and a reliance on two basic materials in the latter cases. Not surprisingly, column (3) shows the same ranking of the first four sectors in 1971, but by then chemicals had displaced paper as the fifth most strongly forward-linked sector.

Columns (4) and (5) of Table VII show changes in forward linkages measured as changes in shares of the one million constant 1961 dollars to which each eigenvector is normalized. Recalling that these vectors are aggregates of a much more detailed industrial break-down, an indication of a significant uniformity of the linkage trend in elements of the aggregate is shown by an asterisk (*): this indicates that at least 75% of the total absolute value of changes in shares of the elements of the aggregate are of the same sign.

The changes in both technology and propensities to import from 1961 to 1971 resulted in the changes in forward linkage shown in column (4). A variety of sectors loosely based on "renewable" resources declined in forward linkage: agriculture, forestry, food and beverages, wood, paper, and printing. Additional significant declines may be noted for petroleum and coal products, construction (which is entirely repair construction), and accommodation and food services. The decline in repair construction is likely related to the younger capital stock in 1971 which resulted from the large investments of the early 1960's.

Column (4) shows major increases in forward linkage for a variety of

FORWARD LINKAGES: THE EFFECTS OF CHANGING TECHNOLOGY AND IMPORT SHARES
(IMPORTS ENDOGENIZED)
NORMALIZED TO $1 MILLION CONSTANT 1961 DOLLARS

	INDUSTRIES	(1) 1961 TECH., 1961 IMPORT COEFF'S	(2) 1971 TECH., 1961 IMPORT COEFF'S	(3) 1971 TECH., 1971 IMPORT COEFF'S	(4) CHANGING TECH. & IMPORT COEFF'S CHANGE IN SHARES (3)-(1)	(5) CHANGING IMPORT COEFF'S ONLY CHANGE IN SHARES (3)-(2)
1	AGRICULTURE	39382	27103	30899	-8483 *	3796 *
2	FORESTRY	32622	20944	21493	-11129 *	549 *
3	FISHING,HUNTING & TRAPPING	1431	977	916	-515 *	-61 *
4	METAL MINES	18663	18812	19427	764	615
5	MINERAL FUELS	24312	24364	26397	2085 *	2033 *
6	NON-METAL MINES & QUARRIES	3009	4221	3722	714 *	-499 *
7	SERVICES INCIDENTAL TO MINING	2467	4758	4879	2413 *	121 *
8	FOOD & BEVERAGE INDUSTRIES	42097	33668	36214	-5884 *	2546 *
9	TOBACCO PRODUCTS INDUSTRIES	101	75	76	-24 *	2 *
10	RUBBER & PLASTICS PRODUCTS IND.	12993	20603	19245	6252 *	-1358 *
11	LEATHER INDUSTRIES	694	855	816	122 *	-39
12	TEXTILE INDUSTRIES	15713	20515	16741	1027	-3775 *
13	KNITTING MILLS	284	945	869	585 *	-76 *
14	CLOTHING INDUSTRIES	1219	1337	1243	24 *	-94 *
15	WOOD INDUSTRIES	13867	11152	11457	-2410 *	305 *
16	FURNITURE & FIXTURE INDUSTRIES	1217	1044	1032	-185 *	-12 *
17	PAPER & ALLIED INDUSTRIES	50183	45769	45813	-4369 *	45
18	PRINTING & PUBLISHING	46740	36559	37479	-9261 *	920 *
19	PRIMARY METAL INDUSTRIES	52711	60667	54592	1881	-6075 *
20	METAL FABRICATING INDUSTRIES	34869	35989	36179	1311	290
21	MACHINERY INDUSTRIES	13489	14785	15673	2184	888 *
22	TRANSPORTATION EQUIPMENT IND.	17798	23713	17550	-248	-6163 *
23	ELECTRICAL PRODUCTS INDUSTRIES	19773	20531	20533	760	3
24	NON-METALLIC MINERAL PROD. IND.	9026	8424	8680	-346	256
25	PETROLEUM & COAL PRODUCTS IND.	31727	29118	30185	-1542 *	1067 *
26	CHEMICAL & CHEMICAL PROD. IND.	47372	49224	48116	745	-1108 *
27	MISC MANUFACTURING INDUSTRIES	9159	10882	9849	690	-1033 *
28	CONSTRUCTION INDUSTRY	39026	26379	27005	-12021 *	626 *
29	TRANSPORTATION & STORAGE	134015	146669	149307	15292 *	2638 *
30	COMMUNICATION	30809	34322	34525	3716 *	203 *
31	ELEC POWER,GAS,OTHER UTILITIES	21241	24209	24132	2890 *	-77 *
32	WHOLESALE TRADE	56807	63710	63403	6596 *	-307 *
33	RETAIL TRADE	40491	42123	42904	2413 *	780 *
35	OTHER FINANCE,INS. & REAL ESTATE	73886	72615	74112	226	1497 *
36	EDUCATION & HEALTH SERVICES	28	86	87	58 *	0 *
37	AMUSEMENT & RECREATION SERVICES	5271	4013	4074	-1197	62 *
38	SERVICES TO BUSINESS MANAGEMENT	28842	37476	38562	9720 *	1086
39	ACCOMMODATION & FOOD SERVICES	22678	17838	18149	-4529 *	310 *
40	OTHER PERSONAL & MISC SERVICES	3939	3625	3664	-325 *	39 *

* INDICATES A SIGNIFICANT TREND IN ELEMENTS OF THE AGGREGATE.

infrastructure sectors: transport, wholesale and retail trade, communications, and services to mining and to business management. Electricity and mineral fuels increased in forward linkage, as did rubber and plastics, textiles, primary metals, metal fabricating, and machinery.

The changes in forward linkage owing to changes in import propensities alone, as shown in column (5), are generally smaller. Transport equipment, chemicals, and miscellaneous manufacturing declined as a result of changing import shares, and finance and real estate increased, whereas there was no significant trend for these sectors in column (4). There was increasing forward linkage both as a result of changing import shares and technology in the case of mineral fuels and transport. Finally, there are a number of instances of significant but opposite trends in columns (4) and (5): the agriculture, food and beverage, and petroleum products sectors exhibited increased forward linkage in consequence of changing import shares, whereas their total forward linkage in fact declined; and sectors such as rubber and plastics, textiles, and primary metals displayed decreasing forward linkage owing to changing import shares, whereas their total forward linkage increased.

The general picture given by this analysis is one of a Canadian economy less dependent on intermediate consumption of domestic renewable resource-based goods, and increasingly dependent on intermediate use of domestic infrastructure items, domestic energy, plastics, metals, and metal goods. It would appear that changes in the structure of imports have moderated the trends owing purely to technology.

Industrial Input Structures

Change in Industrial Input Patterns

Industries change their input structures on account of changes in the commodity-mix of their output but more importantly as a consequence of changes in the techniques of production.

A summary measure of the extent to which industries changed the commodity

CHANGE IN INPUT PATTERNS, 1961-1971

INDUSTRIES	INDEX OF CHANGE OF INPUT PATTERN	RATE OF GROWTH OF INDUSTRY OUTPUT	CHANGES IN DIRECT AND INDIRECT INPUT REQUIREMENTS PER THOUSAND DOLLARS OF OUTPUT 1961-1971 GOODS & SERVICES DOMESTIC	GOODS & SERVICES IMPORTS	EMPLOYMENT (MAN YEARS)
22 TRANSPORTATION EQUIPMENT IND.	14269	12.5	-138.6	96.2	-.0469
10 RUBBER & PLASTICS PRODUCTS IND.	10222	10.0	-37.5	8.8	-.0437
5 MINERAL FUELS	8211	9.6	25.0	5.0	-.0169
38 SERVICES TO BUSINESS MANAGEMENT	6838	9.1	63.7	11.6	-.0185
30 COMMUNICATION	7049	7.7	-80.5	-.7	-.0478
21 MACHINERY INDUSTRIES	13935	7.5	82.5	48.6	-.0289
12 TEXTILE INDUSTRIES	18391	7.3	64.8	-22.6	-.0479
23 ELECTRICAL PRODUCTS INDUSTRIES	7150	7.2	-28.0	7.9	-.0343
31 ELEC POWER,GAS,OTHER UTILITIES	6630	7.0	11.7	29.6	-.0130
13 KNITTING MILLS	22470	6.9	29.1	69.2	-.0766
6 NON-METAL MINES & QUARRIES	6949	6.9	-64.1	-3.0	-.0330
20 METAL FABRICATING INDUSTRIES	6730	6.8	-6.5	-2.7	-.0351
32 WHOLESALE TRADE	6180	6.7	-69.2	-3.1	-.0458
29 TRANSPORTATION & STORAGE	5328	6.6	-4.0	8.3	-.0456
36 EDUCATION & HEALTH SERVICES	3277	6.2	-21.0	5.2	-.0175
27 MISC MANUFACTURING INDUSTRIES	8335	6.1	-38.7	26.0	-.0420
26 CHEMICAL & CHEMICAL PROD. IND.	10037	6.1	3.8	-3.7	-.0278
16 FURNITURE & FIXTURE INDUSTRIES	7957	5.8	-19.7	29.9	-.0461
24 NON-METALLIC MINERAL PROD. IND.	6297	5.5	37.1	-10.1	-.0325
37 AMUSEMENT & RECREATION SERVICES	13923	5.4	24.7	49.4	-.0007
35 OTHER FINANCE,INS. & REAL ESTATE	4775	5.3	37.2	8.9	-.0066
19 PRIMARY METAL INDUSTRIES	9815	5.2	52.2	5.0	-.0152
7 SERVICES INCIDENTAL TO MINING	16738	4.8	-189.1	-46.1	-.0076
25 PETROLEUM & COAL PRODUCTS IND.	8421	4.5	63.9	6.3	-.0083
17 PAPER & ALLIED INDUSTRIES	10511	4.4	77.7	18.5	-.0237
33 RETAIL TRADE	6585	4.4	-74.2	-3.1	-.0353
15 WOOD INDUSTRIES	12782	4.4	21.3	20.8	-.0464
28 CONSTRUCTION INDUSTRY	9628	4.4	22.9	6.5	-.0312
39 ACCOMMODATION & FOOD SERVICES	9003	3.9	81.3	18.4	-.0004
8 FOOD & BEVERAGE INDUSTRIES	8513	3.9	-16.2	-8.7	-.0690
4 METAL MINES	16682	3.8	188.6	37.3	-.0072
1 AGRICULTURE	6088	3.7	2.5	-.7	-.1334
14 CLOTHING INDUSTRIES	19325	3.7	140.7	19.8	-.0417
18 PRINTING & PUBLISHING	6075	3.3	80.3	13.4	-.0235
9 TOBACCO PRODUCTS INDUSTRIES	4717	2.9	33.7	2.1	-.0761
34 OWNER OCCUPIED DWELLINGS	632	2.8	5.4	2.9	-.0064
40 OTHER PERSONAL & MISC SERVICES	6899	2.1	51.4	29.8	.0381
3 FISHING,HUNTING & TRAPPING	10734	1.7	88.4	47.4	.0053
2 FORESTRY	12248	1.3	25.9	13.4	-.0404
11 LEATHER INDUSTRIES	9235	1.1	-121.5	28.5	-.0545

Table VIII

shares of their input structures between 1961 and 1971 is shown in Table VIII. Industries are ranked by their rate of growth of output. As this analysis is concerned with changes in industrial input structures it does not distinguish between domestically produced and imported inputs.

The knitting, clothing and textile industries were among the industries which underwent maximum change in input patterns and the tobacco products industry, the manufacturing industry with the least change in input structure.

No particular relationship between the rate of growth of output of an industry and changes in its input structure is discernible.

Direct and Indirect Input Requirements by Industries

Industrial input structures can also be analysed in terms of the direct and indirect requirement of industries for domestically produced and imported goods and services and for labour.

The main picture that emerges from such an analysis, also shown in Table VIII, is that whether as a consequence of increased specialization, increased intra-industry transactions, or changes in input requirements, most industries marginally increased their direct and indirect use of domestic goods and services per thousand dollars of output, between 1961 and 1971. However, some service industries such as services to mining, communication, retail and wholesale trade and education and health reduced their demand for all categories of goods and services. Other industries which substantially decreased their direct and indirect demand for domestic goods and services were transportation equipment and leather but this decline was in part offset by an increase in their direct and indirect use of imports, as was also the case for other manufacturing industries showing reduced demand for domestic production.

In general, industries increased their import requirements, indicating that on average there was a relative decline in the share of domestically produced goods and services in total intermediate demand.

All but two industries, fishing, hunting and trapping and personal services, showed an increase in labour productivity. They showed a decline in the man-years of employment directly and indirectly required to produce a dollar of industrial output.

Input Substitution

The analysis of changes in input requirements is taken further by the technique of examining changes in the commodity-mix of the intermediate demand that would have been required to produce the goods and services demanded by final purchasers in 1971 (less total imports) if the output mix and input structures had been those of 1961, 1966, and 1971. Table IX, shows the resultant demand for each commodity as a proportion of total intermediate demand and the average annual rate at which their shares changed between 1961 and 1971. The table shows that commodities for which the rate of change is positive increased their share at the expense of commodities for which the rate of change is negative.

Although it is not possible to identify exactly which commodities were substituted, one for the other, a broad picture does emerge. Industry appears to become more energy efficient, with an observed shift away from coal and fuel oil towards natural gas and electricity. Between 1961 and 1971 the share of industrial chemicals and plastic fabricated products grew sharply, whereas the share of wood and wood products and paper and paper products all declined. Within the metals group it is evident that the share of iron and steel and aluminum products increased, whereas the share of nickel, other non- ferrous metal products, copper and other metal fabricated products declined. Among the services, a relative decline in the use of postal services and an increase in the use of telephone and telegraph services can be observed.

THE CHANGING PATTERN OF INDUSTRIAL USE
(CHANGING STRUCTURE AND TECHNOLOGY WITH FIXED FINAL DEMAND)

COMMODITIES	INDUSTRIAL USE NORMALIZED TO ONE MILLION			CHANGE IN PATTERN (ANNUALIZED LINEAR RATE)		
	1961	1966	1971	61-66	66-71	61-71
AGRICULTURE,FORESTRY,FISHING						
6 HUNTING & TRAPPING PRODUCTS	338	326	236	-2	-18	-10
5 FISH LANDINGS	2205	1945	1680	-52	-13	-33
1 GRAINS	6504	6137	5580	-73	-111	-92
2 LIVE ANIMALS	24523	23564	21695	-192	-374	-283
3 OTHER AGRICULTURAL PRODUCTS	20859	18193	17934	-533	-52	-293
4 FORESTRY PRODUCTS	20371	16961	15990	-682	-194	-438
MINERALS						
13 SERVICES INCIDENTAL TO MINING	3185	3867	3813	136	-11	63
12 NON-METALLIC MINERALS	4814	5158	4842	69	-63	3
7 IRON ORES & CONCENTRATES	2595	2594	2596	0	0	0
8 OTHER METAL. ORES & CONCENTRATES	16386	16165	14692	-44	-295	-169
ENERGY						
11 NATURAL GAS	720	1080	1261	72	36	54
78 ELECTRIC POWER	12520	13435	12813	183	-124	29
63 OTHER PETROLEUM & COAL PROD.	6048	5954	5824	-19	-26	-22
10 CRUDE MINERAL OILS	20942	18532	20206	-482	335	-74
9 COAL	3728	4069	2815	68	-251	-91
62 GASOLINE & FUEL OIL	16759	15405	13959	-271	-289	-280
FOOD,BEVERAGES,TOBACCO						
15 DAIRY PRODUCTS	4075	4882	4534	161	-70	46
18 FEEDS	9246	7989	9562	-251	315	32
24 ALCOHOLIC BEVERAGES	834	885	975	10	18	14
25 TOBACCO PROCESSED UNMANUFACTURED	1750	1663	1779	-17	23	3
26 CIGARETTES & TOBACCO MFG.	6	27	3	4	-5	0
19 FLOUR,WHEAT,MEAL & OTHER CEREALS	1839	1837	1815	0	-4	-2
17 FRUITS & VEGETABLES PREPARATIONS	2156	2110	2062	-9	-10	-9
21 SUGAR	1696	1681	1585	-3	-19	-11
16 FISH PRODUCTS	1095	1113	981	4	-26	-11
20 BREAKFAST CEREAL & BAKERY PROD.	1661	1482	1444	-36	-8	-22
23 SOFT DRINKS	1071	990	836	-16	-31	-23
22 MISC. FOOD PRODUCTS	5765	5619	5053	-29	-113	-71
14 MEAT PRODUCTS	14259	12320	12679	-388	72	-158

THE CHANGING PATTERN OF INDUSTRIAL USE
(CHANGING STRUCTURE AND TECHNOLOGY WITH FIXED FINAL DEMAND)

	INDUSTRIAL USE NORMALIZED TO ONE MILLION			CHANGE IN PATTERN (ANNUALIZED LINEAR RATE)		
COMMODITIES	1961	1966	1971	61-66	66-71	61-71
MANUFACTURES						
64 INDUSTRIAL CHEMICALS	17103	19981	23064	576	617	596
29 PLASTIC FABRICATED PRODUCTS	3613	5677	8333	413	531	472
31 YARNS & MAN MADE FIBRES	7119	8334	10277	243	389	316
33 OTHER TEXTILE PRODUCTS	5941	6474	6574	107	20	63
28 OTHER RUBBER PRODUCTS	3131	3362	3698	46	67	57
35 CLOTHING & ACCESSORIES	2042	2105	2577	13	94	54
27 TIRES & TUBES	4659	4893	5152	47	52	49
40 PULP	1569	1990	1890	84	-20	32
60 CEMENT & CONCRETE PRODUCTS	9010	10081	9328	214	-151	32
32 FABRICS	13901	14035	14192	27	31	29
30 LEATHER & LEATHER PRODUCTS	1585	1663	1841	16	36	26
66 PHARMACEUTICALS	1536	1711	1746	35	7	21
69 OTHER MANUFACTURED PRODUCTS	6345	5662	6530	-137	174	19
42 PAPER PRODUCTS	15829	16215	16001	77	-43	17
39 FURNITURE & FIXTURES	829	803	807	-5	1	-2
38 OTHER WOOD FABRICATED MATERIALS	8538	8704	8492	33	-42	-5
37 VENEER & PLYWOOD	3482	3791	3430	62	-72	-5
34 HOSIERY & KNITTED WEAR	177	80	38	-19	-8	-14
67 OTHER CHEMICAL PRODUCTS	14326	13291	13494	-207	41	-83
41 NEWSPRINT & OTHER PAPER STOCK	14529	13526	13162	-201	-73	-137
65 FERTILIZERS	2728	1787	1029	-188	-152	-170
61 OTHER NON-METALLIC MINERAL PROD.	12311	11380	10271	-186	-222	-204
36 LUMBER & TIMBER	7955	6642	5152	-263	-298	-280
METAL PRODUCTS						
45 IRON & STEEL PRODUCTS	31582	33554	33999	394	89	242
46 ALUMINUM PRODUCTS	4326	5364	5868	208	101	154
50 BOILERS, TANKS & PLATES	2842	3112	3792	54	136	95
51 FABRICATED STRUCTURAL METAL PROD	12694	13457	12746	153	-142	5
48 NICKEL PRODUCTS	695	476	431	-44	-9	-26
49 OTHER NON FERROUS METAL PRODUCTS	6209	5638	5434	-114	-41	-77
47 COPPER & COPPER ALLOY PRODUCTS	6662	6734	5725	14	-202	-94
52 OTHER METAL FABRICATED PRODUCTS	34466	33330	32559	-227	-154	-191

THE CHANGING PATTERN OF INDUSTRIAL USE
(CHANGING STRUCTURE AND TECHNOLOGY WITH FIXED FINAL DEMAND)

	INDUSTRIAL USE NORMALIZED TO ONE MILLION			CHANGE IN PATTERN (ANNUALIZED LINEAR RATE)		
COMMODITIES	1961	1966	1971	61-66	66-71	61-71
MACHINERY AND APPLIANCES						
56 MOTOR VEHICLE PARTS	34437	41361	40026	1385	-267	559
54 OTHER INDUSTRIAL MACHINERY	16993	17860	19156	173	259	216
59 OTHER ELECTRICAL PRODUCTS	21132	22806	22930	335	25	180
58 APPLIANCES & RECEIVERS,HOUSEHOLD	1775	2134	2314	72	36	54
68 SCIENTIFIC EQUIPMENT	4428	4506	4879	16	75	45
55 MOTOR VEHICLES	1123	1535	1181	82	-71	6
53 AGRICULTURAL MACHINERY	1340	1047	1041	-58	-1	-30
57 OTHER TRANSPORT EQUIPMENT	4067	3902	3584	-33	-64	-48
SERVICES						
84 BUSINESS SERVICES	21617	25301	29100	737	760	748
76 TELEPHONE & TELEGRAPH	10953	11248	13723	59	495	277
80 WHOLESALE MARGINS	44461	45081	47180	124	420	272
91 OPERATING, OFFICE, LAB. & FOOD	61419	66924	63889	1101	-607	247
74 TRANSPORTATION & STORAGE	77607	77726	79719	24	399	211
79 OTHER UTILITIES	1985	2562	3343	115	156	136
89 OTHER PERSONAL & MISC. SERVICES	21345	23077	22430	347	-129	109
73 PIPELINE TRANSPORTATION	4139	3966	4734	-35	154	59
75 RADIO & TELEVISION BROADCASTING	2795	3360	3094	113	-53	30
86 HEALTH SERVICES	16	15	51	0	7	3
82 IMPUTED RENT OWNER OCPD. DWEL.	0	0	0	0	0	0
85 EDUCATION SERVICES	0	0	0	0	0	0
87 AMUSEMENT & RECREATION SERVICES	1592	1511	1528	-16	3	-6
90 TRANSPORTATION MARGINS	27479	26621	27412	-172	158	-7
81 RETAIL MARGINS	11393	10795	11129	-119	67	-26
83 OTHER FINANCE,INS.,REAL ESTATE	58569	54740	57798	-766	612	-77
77 POSTAL SERVICES	4505	4022	3120	-97	-180	-138
88 ACCOMMODATION & FOOD SERVICES	9362	8393	7437	-194	-191	-192
43 PRINTING & PUBLISHING	13511	11607	11056	-381	-110	-246
44 ADVERTISING,PRINT MEDIA	8379	6381	5462	-400	-184	-292
92 TRAVEL, ADVERTISING & PROMOTION	37819	35986	33579	-367	-481	-424
72 REPAIR CONSTRUCTION	30072	25696	22027	-875	-734	-805

CONCLUSION

The paper has attempted to highlight some of the changes that took place during the decade of the sixties in Canada's industrial structure.

The period between 1961 and 1971 was one of relatively high average growth in the output of goods and services. The economy became more open to trade. Exports gained in importance. Imports grew faster than domestic output, though not as fast as exports. High rates of growth in Investment during the first half of the period, slowed down noticeably in the second half.

Notable in regard to the country's industrial structure was the marked growth of the transportation equipment industry, which was a consequence of both a sharp increase in Exports and an increase in Consumers Expenditure, as well as an increase in intermediate demand on the part of the industry itself, for its own products.

The increase in transportation equipment dominated the growth in exports. Other industries which made an important contribution to the increase in exports were mineral fuels, paper and wood, primary metals and machinery.

In regard to the interdependence of the economy, the analysis of "forward linkages" showed that the broad picture was of a production system less structurally dependent on the domestic production of renewable resource based industries, on petroleum and coal products and on repair construction, while becoming in general more structurally dependent on the domestic production of energy goods, plastics, infrastructure services, services to business management, metals, and metal goods.

The analysis of "input substitution" came to the same conclusion and showed, for example, that the use of domestically produced industrial chemicals, plastic fabricated products and man made fibres, iron and steel and aluminum products, and business services increased.

During this period, industry appeared to become more energy efficient while at the same time the use of domestically produced mineral fuels increased. A small shift away from coal and fuel oil towards natural gas and

electricity also occured.

By and large industries marginally increased their total direct and indirect requirements for goods and services except for certain service industries such as services incidental to mining, communications, trade, education and health, and some manufacturing industries, whose requirements declined.

With respect to Imports, the majority of industries increased their dependence on imported inputs. However, in general, changes in the pattern of imports paralleled those of domestic demand so that the structural change in industrial use that took place during the period can be attributed more to changes in the input requirements for production and the output-mix of industries than to the pattern of imports.

APPENDIX

I Analysis of Structure - The Dominant Eigenvector

There is an extensive literature on the importance and interpretation of the dominant eigenvector, i.e. the eigenvector corresponding to the dominant eigenvalue, for dynamic Leontief systems which typically include a capital matrix. Structure, can however, also be viewed as a static concept. This section will attempt to show how the right dominant eigenvector of a static I-O system may be interpreted as an indicator of structure in the sense of indicating the relative strength of the forward linkages associated with each industry. Comparing changes in the eigenvector over time therefore provides another measure of structural change in the Canadian economy.

The right eigenvector has been described as representing the general structure of linkages of the technology matrix by Levitt in the Statistics Canada Input-Output Study of the Atlantic Provinces 2 p.254 ; the following development is a clarification and extension of this methodology.

We begin with the usual power series expression of the solution to a static I-O system for a semi-positive final demand Y:

$$X = \sum_{n=o}^{\infty} X^n$$

where

$$X^o = Y, \; X^n = (DB)^n Y.$$

It is straightforward to show that there exists an integer N such that for any Y,

$$X^N \simeq K_Y r^N X_r$$

where K_Y is a scalar constant, r is the dominant eigenvalue and X_r the corresponding eigenvector of the technology matrix DB.

Although the eigenvector (which is real and semi-positive) is unique only up to a scalar multiple, there is information contained in the relative ranking of its elements. The last expression suggests that independent of

the final demand the industry corresponding to the largest element of the eigenvector has the largest N-th round gross output, and will continue to do so for all succeeding iterations.

It is essential to avoid the fallacy of attributing any implicit time dimension to the power series solution. We note that there exists an integer N such that for any demand Y the solution may be written as

$$X \simeq Y + \sum_{n=1}^{N-1} (DB)^n Y + K_Y \frac{(r^N)}{1-r} X_r$$

Numerically, N may be determined by specifying a desired criterion and accuracy of convergence. If Z_r is the dominant eigenvector of (DB)', and is therefore real and semi-positive, the following can be proved:

$$K_Y = Z_r' Y$$

for Z_r' such that

$$Z_r' X_r = 1.$$

With these facts it is clear that in general gross production in a Leontief system is the sum of three terms: the net production Y, a portion of intermediate production which is linear in Y and exhibits a pattern dependent on Y, and a portion of intermediate production which, although also linear in Y, exhibits the pattern of the dominant eigenvector of DB for any arbitrary Y.

The dominant eigenvector is therefore of fundamental structural importance in the composition of intermediate production. The relative size of the value corresponding to a given industry in the dominant eigenvector is an intrinsic measure of that industry's importance as a <u>producer</u> of intermediate goods, which is determined by the structure of the production system. In this sense we can refer to the dominant eigenvector as an indicator of the forward linkage of industries.

APPENDIX II

DEFINITION OF FINAL DEMAND AGGREGATION

IN TERMS OF L SEQUENTIAL NUMBERS [1]

FINAL DEMAND NO	FINAL DEMAND TITLE	L SEQUENTIAL NO
1.	Consumer Expenditure	1-40
2.	Fixed Capital Formation	41-119
3.	Inventories	120-121
4.	Gov't Current Expenditure	122-127
5.	Exports	128
6.	Re-exports	129
7.	Imports	130
8.	Gov't Revenue from the Sale of Goods and Services	131-136

DEFINITION OF INDUSTRY AGGREGATION
IN TERMS OF L SEQUENTIAL NUMBERS [1]
and U.N. INTERNATIONAL
STANDARD INDUSTRIAL CLASSIFICATION (MAJOR GROUP)

M - INDUSTRY NO	M - INDUSTRY TITLE	L SEQUENTIAL	UN ISIC
1.	Agriculture	1	111, 112
2.	Forestry	2	121, 122
3.	Fishing, Hunting & Trapping	3	113, 130
4.	Metal Mines	4-7	230
5.	Mineral Fuels	8-9	210, 220
6.	Non-Metal Mines & Quarries	10-14	290
7.	Services Incidental to Mining	15	
8.	Food & Beverage Industries	16-32	311-313
9.	Tobacco Products Industries	33-34	314
10.	Rubber & Plastic Products Ind.	35-38	355, 356
11.	Leather Industries	39-42	323, 324
12.	Textile Industries	43-55	321
13.	Knitting Mills	56-57	321
14.	Clothing Industries	58	322
15.	Wood Industries	59-64	331
16.	Furniture & Fixture Industries	65-68	332
17.	Paper & Allied Industries	69-72	341
18.	Printing & Publishing	73-74	342
19.	Primary Metal Industries	75-82	371, 372
20.	Metal Fabricating Industries	83-91	381
21.	Machinery Industries	92-95	382
22.	Transportation Equipment Ind.	96-102	384
23.	Electrical Products Industries	103-110	383
24.	Non-Metallic Mineral Prod. Ind.	111-120	369
25.	Petroleum & Coal Products Ind.	121-122	353, 354
26.	Chemical & Chemical Prod. Ind.	123-130	351, 352
27.	Misc Manufacturing Industries	131-137	361, 362, 385, 390
28.	Construction Industry	138-146	500
29.	Transportation & Storage	147-157	711-713, 719
30.	Communication	158-160	720
31.	Elec Power, Gas, Other Utilities	161-163	410, 420
32.	Wholesale Trade	164	610
33.	Retail Trade	165	620
34.	Owner Occupied Dwellings	166	
35.	Other Finance, Ins. & Real Estate	167-170	810, 820, 821
36.	Education & Health Services	171-173	931-933
37.	Amusement & Recreation Services	174-175	941, 942, 949
38.	Services to Business Management	176-177, 183	832, 833
39.	Accommodation & Food Services	179	631, 632
40.	Other Personal & Misc Services	178, 180-182	951-953, 959
41.	Transportation Margins	187	Dummy industries
42.	Operating, Office, Lab & Food	184-186, 188, 191	Dummy industries
43.	Travel & Advertising, Promotion	189-190	Dummy industries

DEFINITION OF COMMODITY AGGREGATION IN TERMS OF L SEQUENTIAL NUMBERS

M-COMMODITY NO	M - COMMODITY TITLE	L SEQUENTIAL NO
1	GRAINS	6-8
2	LIVE ANIMALS	1-5
3	OTHER AGRICULTURAL PRODUCTS	9-23
4	FORESTRY PRODUCTS	24-28
5	FISH LANDINGS	29
6	HUNTING & TRAPPING PRODUCTS	30
7	IRON ORES & CONCENTRATES	34
8	OTHER METAL ORES & CONCENTRATES	31-33, 35-36
9	COAL	37, 40
10	CRUDE MINERAL OILS	38
11	NATURAL GAS	39
12	NON-METALLIC MINERALS	41-50
13	SERVICES INCIDENTAL TO MINING	51
14	MEAT PRODUCTS	52-66
15	DAIRY PRODUCTS	67-74
16	FISH PRODUCTS	75
17	FRUITS & VEGETABLES PREPARATIONS	76-84
18	FEEDS	85-89, 100, 103, 118
19	FLOUR,WHEAT,MEAL & OTHER CEREALS	90-91
20	BREAKFAST CEREAL & BAKERY PROD	92-95
21	SUGAR	101
22	MISC. FOOD PRODUCTS	96-99, 102, 104, 106-113
23	SOFT DRINKS	114-115
24	ALCOHOLIC BEVERAGES	116, 119-120
25	TOBACCO PROCESSED UNMANUFACTURED	121
26	CIGARETTES & TOBACCO MFG.	122-123
27	TIRES & TUBES	125-128
28	OTHER RUBBER PRODUCTS	124, 129-134
29	PLASTIC FABRICATED PRODUCTS	135-138
30	LEATHER & LEATHER PRODUCTS	139-144
31	YARNS & MAN MADE FIBRES	145-146, 151, 154-157, 161, 164
32	FABRICS	147-148, 152, 158-159, 167-168, 181-182
33	OTHER TEXTILE PRODUCTS	149-150, 153, 160, 162-163, 165-166, 169-179
34	HOSIERY & KNITTED WEAR	180, 183
35	CLOTHING & ACCESSORIES	184-189
36	LUMBER & TIMBER	191
37	VENEER & PLYWOOD	195
38	OTHER WOOD FABRICATED MATERIALS	190, 192-194, 196-203
39	FURNITURE & FIXTURES	204-208
40	PULP	209
41	NEWSPRINT & OTHER PAPER STOCK	210-216
42	PAPER PRODUCTS	217-227
43	PRINTING & PUBLISHING	228-231, 233-234
44	ADVERTISING,PRINT MEDIA	232
45	IRON & STEEL PRODUCTS	235-244, 247-252
46	ALUMINUM PRODUCTS	257, 264
47	COPPER & COPPER ALLOY PRODUCTS	254, 265-266
48	NICKEL PRODUCTS	253, 268
49	OTHER NON FERROUS METAL PRODUCTS	246, 255-256, 258-263, 267, 269-271
50	BOILERS, TANKS & PLATES	272-275, 300
51	FABRICATED STRUCTURAL METAL PROD	276-279
52	OTHER METAL FABRICATED PRODUCTS	280-298, 301-313
53	AGRICULTURAL MACHINERY	314-315
54	OTHER INDUSTRIAL MACHINERY	316-329
55	MOTOR VEHICLES	334-339
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57	OTHER TRANSPORT EQUIPMENT	330-333, 345-352
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